Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (Original) A spectrally encoded endoscopic probe capable of having spatially encoded location information, comprising:

(a) at least one flexible energy conducting member;

b) a source of energy;

c) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

d) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

e) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

f) means for receiving energy reflected from said sample.

2. (Original) The probe of Claim 1, wherein said. at least one flexible energy conducting member comprises at least one optical fiber,

3. (Original) The probe of Claim 1, wherein said fiber is mode or phase modulated.

4. (Original) The probe of Claim 1, wherein said source of energy is a light-emitting diode, super-luminescent diode, rare-earth doped fibers, solid-state mode-locked laser, spectrally broadened laser, monochromatic light, polychromatic light, infrared, ultraviolet, ultrasonic, low or high energy radiation, x-ray radiation, alpha radiation, beta radiation, or gamma radiation, or mixtures thereof

5. (Original) The probe of Claim 1, wherein said dispersive element is a diffractive element.

6. (Original) The probe of Claim 1, wherein said dispersive element is a refractive element.

7. (Original) The probe of Claim 1, wherein said dispersive element is a fiber grating, blazed grating, binary, prism, prism or holographic lens grating.

8. (Original) The probe of Claim 1, wherein said means for focusing comprises a lens.

9. (Original) The probe of Claim 1, wherein said lens is a gradient index lens, a reflective mirror lens grating combination or diffractive lens.

10. (Original) The probe of Claim 1, wherein said means for scanning is a piezoelectric transducer or a torque transducing device.

11. (Original) The probe of Claim 1, farther comprising means for detecting said received reflected energy.

12. (Original) The probe of Claim 11, wherein said detection means is a single detector, one dimensional array of detectors or a two dimensional array of detectors.

13. (Original) The probe of Claim 12, wherein said detection means is a means for interferometric spectral decoding.

14. (Original) The probe of Claim 12, wherein said detection means is a means for direct spectral decoding.

15. (Original) The probe of Claim 1, further comprising a mirror.

16. (Original) The probe of Claim 1, further comprising a means for polarization control.

17. (Original) The probe of Claim 1, further comprising a beam splitter.

18. (Original) The probe of Claim 1, further comprising abeam stop.

19. (Original) The probe of Claim 11, wherein said detection means is physically associated with said probe.

20. (Original) The probe of Claim 11, wherein said detection means provides spectroscopic information.

21. (Original) The probe of Claim 11, wherein said detection means provides three dimensional information.

22. (Original) The probe of Claim 1, wherein said probe has diameter of less than about 1.0 mm.

23. (Original) The probe of Claim 1, wherein said probe has a number of resolvable points of from about 10,000 to about 1,000,000.

24. (Original) The probe of Claim 1, wherein said probe has a number of resolvable points of from about 150,000 to about 300,000.

25. (Original) The probe of Claim 1, wherein said probe has a number of resolvable points of from about 10,000 to about 150,000.

26. (Original) A spectrally encoded endoscopic probe capable of having spatially encoded location information, comprising:

a) a body having a proximal end and a distal end;

b) an elongated flexible energy conducting member having a proximal end and a distal end;

c) an optical head associated with said distal end of said energy conducting member, said optical head being capable of rotatable or translational movement with respect to said body.

27. (Original) A method for imaging, comprising:

a) providing an endoscopic probe capable of having spatially encoded location information, comprising:

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample;

b) introducing said probe into a patient;

c) transmitting a source energy signal to said probe such that said energy signal is directed at a sample;

d) receiving the reflected energy from said sample; and,

e) detecting said reflected energy.

28. (Original) The method of Claim 27, wherein said probe has a diameter of less than about 1.0mm.

29. (Original) The method of Claim 27, wherein said probe has a number of resolvable points of from about 300,000 to about 1,000,000.

30. (Original) The method of Claim 27, wherein said probe has a number of resolvable points of from about 150,000 to about 300,000.

31. (Original) The method of Claim 27, wherein said probe has a number of resolvable points of from about 100,000 to about 150,000.

32. (Original) A detection system using spectrally encoded information, comprising:

a) a flexible light conducting member;

b) a housing;

c) means for focusing energy;

d) means for dispersing energy received from said means for focusing energy; and,

e) means for scanning.

33. (Original) An imaging device capable of detecting a plurality of wavelengths of energy reflected from a sample, comprising:

i) a plurality of probes, each probe capable of having spatially encoded location information and comprising at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample;

b)a plurality of wavelengths of energy capable of impinging on said sample;

c) wherein each energy delivering fiber has an end that is polished at an angle different from each other such that an energy source transmitted through each fiber is focused onto a single target site.

34. (Original) An imaging device capable of detecting a plurality of wavelengths of energy

reflected from a sample, comprising:

a) an endoscopic probe capable of having spatially encoded location information, comprising:

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample;

b) at least one energy source capable of producing a plurality of wavelengths of energy capable of impinging on said sample; and,

c) a plurality of focusing means associated with and spaced along said fiber such that each focusing means is capable of focusing energy on a distinct location on said sample.

35. (Original) A probe, comprising:

a) at least one lumen;

b) a spectrally encoded imaging probe comprising

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample; and,

c) means for introducing said catheter through the skin and into a blood vessel of a patient.

36. (Original) The probe of Claim 35, wherein said at least one lumen comprises a first lumen and a second lumen, said first lumen capable of containing said probe, said second lumen capable of delivering an agent or device to a target area.

37. (Original) The probe of Claim 23, wherein said catheter has a diameter of less than or equal to about 1.0mm.

38. (Original) The probe of Claim 36, wherein said probe has a diameter of less than about 1.0mm,

39. (Original) The probe of Claim 35, wherein said probe has a resolution of from about 300,000 to about 1,000,000 resolvable points.

40. (Original) The probe of Claim 35, wherein said probe has a resolution of from about 150,000 to about 300,000 resolvable points.

41. (Original) The probe of Claim 35, wherein said probe has a resolution of from about 100,000 to about 150,000 resolvable points.

42. (Original) The probe of Claim,35, wherein said agent is a drug.

43. (Original) The probe of Claim 42, wherein said drug is a thrombolytic agent, plaque removing agent, antiplatelet agent, anticoagulant, vasoactive agent, or a combination thereof

44. (Original) The probe of Claim 35, wherein said agent is a device.

45. (Original) The probe of Claim 44, wherein said device is an ultrasonic, laser or cauterizing probe, a set of retractable teeth forming a claw for grabbing an intravascularly located body, a suction tube, a means for grasping a sample of material, a cauterizing tip or an artificial a.v. fistula.

46. (Original) The probe of Claim 35, wherein said agent is energy provided by an energy source.

47. (Original) The probe of Claim 35, further comprising means for displacing fluid from the field of view.

48. (Original) A multifiber catheter having at least one imaging fiber and at least one therapeutic light energy delivering fiber.

49. (Original) The multifiber catheter of Claim 48, wherein said imaging fiber is capable of transmitting energy at a first wavelength and said therapeutic light energy delivering fiber is capable of transmitting energy at a second wavelength.

50. (Original) The multifiber catheter of Claim 48, wherein said imaging fiber and said energy delivering fiber are coaxial.

51. (Original) The multifiber catheter of Claim 48, wherein said imaging fiber and said energy delivering fiber are in a side-by-side configuration.

52. (Original) The multifiber catheter of Claim 48, wherein said imaging fiber and said energy delivering fiber each have an end that is polished at an angle different from each other such that an energy source passing through each fiber is focused onto a single target site.

53. (Original) The catheter of Claim 48, wherein said first wavelength and said second wavelength are different.

54. (Original) The catheter of Claim 48, wherein said first wavelength and said second wavelength are the same.

55. (Original) A multifiber imaging apparatus using spectrally encoded information, comprising:

a) an elongated hollow generally cylindrical body having a plurality of spaced apart apertures defined on the surface thereon;

b) a plurality of flexible energy conducting fibers disposed at least partially within said body, at least one fiber positioned at least partially within each of said apertures;

c) an imaging head associated with each of said fibers; and,

d) at least one detector associated with said plurality of fibers.

56. (Original) An imaging apparatus, comprising:

a) an elongated hollow generally cylindrical body;

b) a plurality of optical fibers defining an array disposed at least partially within said body each fiber having a distal end;

c) a plurality of lenses, each lens associated with a distal end of each optical fiber as part of said array, such that each lens is capable of focusing energy transmitted from an energy source through said array on a distinct position on a target sample.

57. (Original) The imaging apparatus of Claim 56, wherein each optical fiber in said array has a different length such that each distal end and associated lens does not substantially overlap any other lens in said array.

58. (Original) The imaging apparatus of Claim 56, further comprising means for rotating said array about an axis.

59. (Original) An imaging apparatus, comprising:

a) an optical fiber having an outer surface; and,

b) a plurality of means for focusing a source of energy onto a distinct target position; each focusing means being spaced along said outer surface, wherein said energy source is spectrally encoded.

60. (Original) A remote controlled spectrally encoded imaging system, comprising:

a) an endoscopic probe capable of having spatially encoded location information, comprising:

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample;

b) means for detecting the image information from said transmitted information;

c) means associated with said probe for transmitting the detected information;

d) means for receiving information transmitted by said probe; and,

e) means for processing said information.

61. (Original) The imaging system of Claim 60, wherein said remote controlled spectrally detection means provides spectroseopic information.

62. (Original) The imaging system of Claim 60, detection means provides three dimensional information.

63. (Original) The imaging system of Claim 60, wherein said detection means is a single detector, one dimensional array of detectors or a two dimensional array of detectors.

64. (Original) The imaging system of Claim 60, wherein said detection means is a means for interferometric spectral decoding.

65. (Original) The imaging system of Claim 60, wherein said detection means is a means for direct spectral decoding.

66. (Original) A kit for performing an endoscopic procedure, comprising:

a) an endoscopic probe capable of having spatially encoded location information, comprising:

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis; and,

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

b) means for receiving energy reflected from said sample;

c) a disinfectant;

d) an anesthetic; and,

e) means for introducing said probe into a patient.

67. (Original) A kit for performing a catheterization procedure, comprising:

a) an endoscopic probe capable of having spatially encoded location information, comprising:

i) at least one flexible energy conducting member;

ii) a source of energy;

iii) a dispersive element through which said energy is transmitted or reflected

such that said energy spectrum is dispersed;

iv) means for focusing said dispersed energy onto a sample such that the impingement spot for each wavelength is at a distinct location on said sample, the spectrum of wavelength defining a wavelength encoded axis;

v) means for scanning said sample with said focused energy in a direction different from said wavelength encoded axis; and,

vi) means for receiving energy reflected from said sample;

b) a guidewire;

c) an introducer;

d) a syringe;

e) at least one expander; and,

f) an introducer catheter.